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Two new species of *Rhombognathus* (Halacaridae, Trombidiformes) from a Mangrove in the northern littoral zone of São Paulo State (Brazil)

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Abstract

Two species belonging to the algivorous genus *Rhombognathus* are described from algae associated to mangrove trees. *Rhombognathus aribus* sp. nov. is similar to *R. major* Bartsch, 2005, but may be set apart by the lacking of the third pair of dorsal setae on Ocular plates, adjunct setae on Posterior Epimeral plates, absence of ventral setae on basifemura III–IV and presence of ventromedial bipectinate setae on tibiae II of all individuals and on tibiae III of most of them. *Rhombognathus picinguabensis* sp. nov. shares the leg chaetotaxy and shape of the lateral claws with *R. parvulus* Viets, 1939. The latter species, however, can be easily separated from the former due the fusion of all dorsal plates in a single dorsal shield.

Key words: *Rhombognathinae*, estuarine, Prostigmata, Acari, Brazil, western South Atlantic

Introduction

Rhombognathus Trouessart, 1888 is a cosmopolitan genus of algivorous mites, which comprises 110 species thus far (Abé 2013; Abé & Fernandes 2011; Abé & Etemadi 2014; Bartsch 2009a–b; 2013). It is an abundant inhabitant of upper littoral and intertidal algae belts and may be easily found on algae from estuarine environments (e.g. Bartsch 2003a). The genus is the most diversified among *Rhombognathinae*, sharing the dark green to blackish color due the gut contents with the other species belonging to this subfamily, something that makes them rather conspicuous when sorting the phytal meiobenthos.

Its occurrences to the Brazilian coastline is limited to four nominal species, three from the Northeastern state of Pernambuco, *Rhombognathus levigatus* Bartsch 2000, *R. areolatus* Abé & Fernandes 2011, and *R. recifensis* Abé & Fernandes 2011, and a single species from the Southeastern state of São Paulo, *Rhombognathus levigatoides* Pepato & Rocha 2007 (Abé & Fernandes 2011; Pepato & Rocha 2007). Abé & Fernandes (2011) suggested that *R. levigatoides* and *R. levigatus* are co-specific, despite morphological variation detected between Brazilian and Australian populations, its *locus typicus*. Although it is a problem to be solved employing further evidence, the description by Abé & Fernandes (2011) agrees with that of *R. levigatoides* and consider the Pernambuco and São Paulo populations as co-specific and the actual number of *Rhombognathus* species in the Brazilian littoral to be three.

Material and methods

The specimens were collected during the low tide on 12 March 2005 from 9:30 am to 11:20 am. Algal turfs on mangrove aerial roots, trunks and pneumatophores were scraped from two points along the Fazenda River (municipality of Ubatuba, São Paulo State): at 23°21'55,5"S 44°50'18,6"W, water salinity of 6 ‰ and vegetation restricted to *Rhizophora mangle* L., and at 23°21'38,5"S 44°50'38,5"W, water salinity of 2 ‰ and vegetation including *Rhizophora mangle* L. and *Avicenia schaueriana* Stapf. & Leech. ex Moldenke. Algae were sorted under a stereoscopic microscope and the material obtained was fixed in 70% alcohol. Mites were cleared in lactic acid

Remarks. Among *Rhombognathus* species, a leg chaetotaxy formulae combining Telofemura I–IV with 6,6,3,3 setae, Genua with I–IV 5,5,3,3 setae, and setae and claws with vestigial accessory process are also found in *Rhombognathus parvulus* Viets, 1939 (Viets 1939). This species can be easily separated from *R. picinguabensis* **sp. nov.** due the fusion of all dorsal plates in a single dorsal shield.

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References

- Abé, H. (1998) *Rhombognathine Mites: Taxonomy, Phylogeny, and Biogeography*. Hokkaido University Press, Sapporo, 228 pp.
- Abé, H. (2013) A New Species of *Rhombognathus* (Acari: Halacaridae) from the Coast of Accra, Ghana. *African Entomology*, 21 (2), 215–220.
<http://dx.doi.org/10.4001/003.021.0229>
- Abé, H. & Etemani, I. (2014) Two rhombognathine mites (Acari:Halacariade) from the Gulf of Oman, Iran. *Persian Journal of Acarology*, 3 (2), 107–119.
- Abé, H. & Fernandes, M.L.B. (2011) Three species of rhombognathine mites (Acari: Halacaridae) from the coast of Recife, Brazil. *Revista Nordestina de Zoologia*, 5 (2), 1–18.
- Bartsch, I. (1999) *Rhombognathus longisetus*, a new halacarid mite (Rhombognathinae, Halacaroidea, Acari) from New Caledonia. *Cahiers de Biologie Marine*, 40, 15–20.
- Bartsch, I. (2000) Rhombognathinae (Acari: Halacaridae) from the Great Barrier Reef, Australia. *Memoirs of the Queensland Museum*, 45, 165–203.
- Bartsch, I. (2003a) Mangrove halacarid fauna (Halacaridae, Acari) of the Dampier region, Western Australia, with description of five new species. *Journal of Natural History*, 37, 1855–1877.
<http://dx.doi.org/10.1080/00222930110089184>
- Bartsch, I. (2003b) Rhombognathine mites (Halacaridae: Acari) from Dampier, Western Australia: taxonomy and biogeography, In: Wells, F.E., Walker, D.I. & Jones, D.S. (Eds.), *The Marine Flora and Fauna of Dampier, Western Australia*. Western Australian Museum, Perth, pp. 255–280.
- Bartsch, I. (2005a) Upper littoral rhombognathines (Acari: Halacaridae) of Singapore: description of three new species. *Cahiers de Biologie Marine*, 46, 273–287.
<http://dx.doi.org/10.1051/acarologia/20132097>
- Bartsch, I. (2005b) The rhombognathine fauna of Australia (Rhombognathinae: Halacaridae: Acari) with notes on the fauna of Esperance, Western Australia. In: Wells, F.E., Walker, D.I. & Kendrick, G.A. (Eds.), *The Marine Flora and Fauna of Esperance, Western Australia*. Western Australian Museum, Perth, pp. 375–397.
- Bartsch, I. (2006) A new species and new record of *Rhombognathus* from Singapore (Acari: Halacaridae). *Zootaxa*, 1120, 41–49.
- Bartsch, I. (2007) *Rhombognathus* from the Caribbean area, with description of a new species (Arachnida, Acari, Halacaridae). *Senckenbergiana Biologica*, 87, 17–22.
- Bartsch, I. (2009a) Checklist of marine and freshwater halacarid mite genera and species (Halacaridae: Acari) with notes on synonyms, habitats, distribution and descriptions of the taxa. *Zootaxa*, 1998, 1–170.
- Bartsch, I. (2009b) *Rhombognathus* (Halacaridae: Rhombognathinae) from Mauritius, new records from the western Indian Ocean. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 106, 27–38.
- Bartsch, I. (2013) Upper littoral Rhombognathines (Acari: Halacaridae) from Singapore: description of a new species. *Acarologia*, 53 (3), 305–313.
<http://dx.doi.org/10.1051/acarologia/20132097>
- Green, J. & Macquitty, M. (1987) *Halacarid mites*. Linnean Society of London/Estuarine and Brackish-Water Sciences Association and E. J. Brill/W. Backhuys, London, 178 pp.
<http://dx.doi.org/10.1017/s0025315400043435>
- Newell, I.M. (1984) Antarctic Halacaroidea. *Antarctic Research Series*, 40, 1–284.
<http://dx.doi.org/10.1029/ar040>

- Pepato, A.R. & Rocha, C.E.F. (2007) Description of a new species of *Rhombognathus* (Halacaridae, Acari), its spermiogenesis and spermatozoa. *Journal of Natural History*, 41, 2433–2445.
<http://dx.doi.org/10.1080/00222930701567877>
- Trouessart, E.L. (1888) Note sur les acariens marins recueillis par M. Giard au laboratoire maritime de Wimereux. *Comptes Rendus de l'Académie des Sciences, Paris*, 107, 753–755.
- Viets, K. (1939) Meeresmilben aus der Adria (Halacaridae und Hydrachnellae, Acari). *Archiv für Naturgeschichte*, Neue Folge, 8, 518–550.

APPENDIX. Characters and character states scored in Abé's (1998) tabular key to species of the genus *Rhombognathus* Trouessart, 1888.

- 1 Dorsal plates: (a) Four plates; (b) OC and PD fused; (c) All dorsal plates fused.
- 2 Ventral plates in female: (a) All ventral plates fused; (b) AE, PE and GP fused; (c) PE, GP and AP fused; (d) PE and GP fused; (e) AE and PE fused; (f) GP and AP fused; (g) All plates separated (five plates).
- 3 Ventral plates in male: (a) All ventral plates fused; (b) AE, PE and GP fused; (c) PE, GP and AP fused.
- 4 Number of corneas on each OC.
- 5 Number of pairs of setae on PD.
- 6 Number of adjunctive setae on each side of AE.
- 7 Number of adjunctive setae on each side of PE.
- 8 Number of pgs on each side of female GO.
- 9 Number of sgs on each genital sclerite in the female.
- 10 Number of pgs (including outlying basilar setae) in the male.
- 11 Number of basilar setae on each side of male GO: (a) One; (b) Two; (c) Three; (d) Four; (e) None.
- 12 Form of pgs in male: (a) Branched or furcate; (b) Filiform.
- 13 Number of sgs on each genital sclerite in the male.
- 14 Number of setae on basifemura II.
- 15 Number of dorsal setae on tarsus III.
- 16 Form of accessory process and claw-shaft of lateral claw: (a) Accessory process broad and endoplanate with many teeth. Claw shaft smooth; (b) Accessory process is narrow and endoplanate with some teeth. Claw-shaft smooth; (c) Accessory process is narrow and palmate with some (5-) teeth. Claw shaft smooth; (d) Accessory process is narrow and palmate with a few (-4) teeth. Claw-shaft smooth; (e) Accessory process is narrow and palmate. Claw-shaft furnished with some teeth; (f) Accessory process with a single tooth, sometimes vestigial. Claw-shaft smooth; (g) Accessory process is lacking. Claw-shaft is sometimes furnished with some minute barbs.
- 17 Leg chaetotaxy of telofemura I–IV.
- 18 Leg chaetotaxy of genua I–IV.
- 19 Leg chaetotaxy of tibiae I–IV.
- 20 Leg chaetotaxy of bipectinate setae on genua I–IV.
- 21 Leg chaetotaxy of bipectinate setae on tibiae I–IV.
- 22 Idiosoma length (μm).
- 23 Idiosoma width (μm).
- 24 Gnathosoma length (μm).
- 25 Gnathosoma width (μm).
- 26 Ratio of gnathosoma to idiosoma length.